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ABSTRACT

This paper presents some of the overall findings of the Cooperative Reading Project (CRP), a collaboration between six teachers in a bilingual Spanish/English elementary school and a team of university researchers to examine and improve upon cooperative learning literacy instruction. The CRP took a social constructivist learning stance toward cooperative learning as well as toward professional development of teachers. The project focused on teachers' thinking and its relation to their classroom actions and students' attitudes and learning. Teachers participated in ongoing, collaborative staff development meetings, and each developed a personal instructional refinement agenda. Data was gathered through teacher and student interviews, instructional observations, and a pre-, mid-, and post-intervention written assessment of student literacy strategy use and motivational orientation, using the Motivated Strategies for Learning Questionnaire. The study found that students showed increases in liking for cooperative learning and, in the lower elementary grades, in metacognitive knowledge. The findings suggest that a collaborative, social constructivist perspective on teacher change can contribute to significant changes in instruction. An appendix contains sample responses of students' awareness of conditional knowledge. (Contains 33 references.) (MDM)

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THE COOPERATIVE READING PROJECT: A COLLABORATION WITH TEACHERS TO EXAMINE AND IMPROVE UPON COOPERATIVE LEARNING IN LITERACY INSTRUCTION

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The Cooperative Reading Project: A Collaboration with Teachers to Examine and Improve Upon Cooperative Learning in Literacy Instruction

Abstract

This paper presents some of the overall findings of the Cooperative Reading Project (CRP), a collaboration between six teachers in a bilingual elementary school and a team of university researchers to examine and improve upon cooperative learning literacy instruction. The CRP took a social constructivist learning stance toward cooperative learning as well as toward professional development of teachers. The project focused on teachers' thinking and its relation to their classroom actions and students' attitudes and learning. Teachers participated in ongoing, collaborative staff development meetings, and each developed a personal instructional refinement agenda. Teacher and student interviews, instructional observation and audio-taping, and written instrumentation were used to gather data. Findings suggest that a collaborative, social constructivist perspective on teacher change can contribute to significant changes in instruction. Also, students can respond with enhanced liking for cooperative group work, and perhaps greater metacognitive knowledge and volition for literacy as well, when confronted with subtle shifts in the content of cooperative group instruction. This calls into question the mainstream cooperative learning paradigm's emphasis on affect and group structures to the near exclusion of academic content. It also challenges dissemination models of teacher professional development and supports a social constructivist orientation.

Background

Implementation of research findings in classrooms is a notoriously difficult process, as it often conflicts with current practice and teacher conceptions about teaching and learning. Educational reform has been characterized by one-way transmission of research findings, teacher resistance, and haphazard program implementation (cf. Duffy and Roehler, 1986; Sarason, 1971). By contrast, Cohn and Kottkamp (1993), Richardson (1990) and Zumwalt (1986) argue that models of reform in which researchers collaborate with teachers are more likely to elicit a willingness to critically reflect on practice, as well as to identify contextually congruent reforms.

Richardson (1990) has recently reported on a reading instruction reform in which researchers serve as facilitators with groups of teachers to examine their teaching practices, explain their rationales for them, and identify useful theory and research. Richardson found her participating teachers to be quite open to change as long as the following conditions were met: the changes did not violate their beliefs about teaching and learning; the changes engaged students and provided the teachers with control over them; and the changes helped teachers respond to contextual demands, such as for high test scores. Good, McCaslin and Reys (1991) have begun reporting on a collaborative teacher-researcher reform project to develop mathematical problem-solving skills in small groups. The researchers are manipulating variables thought to affect group processes, such as group composition, but the teachers hold final say on all decisions in their classrooms on the premise that they are best able to analyze the contextual factors which affect their students' learning.

Cooperative learning is an extremely popular instructional approach which calls for students to work in small groups on their academic tasks with little or no direct teacher supervision (cf., Bossert, 1989; Johnson and Johnson, 1987; Slavin, 1983). However, despite the popularity of cooperative learning, little mention is made in the literature regarding the role that teacher thinking plays in the successful utilization of such techniques. Teacher conceptions are crucial for cooperative learning since these methods assume a radically different theory of teacher and student roles from traditional teacher-directed instruction. Growing numbers of teachers are turning to cooperative learning methods for literacy instruction, yet several recent studies have found teachers

to hold theories of cooperative learning which are unrelated, or even antithetical, to helping students learn to become strategic, independent readers.

Palincsar, Stevens and Gavelek (1989; Palincsar & Brown, 1984) maintain that a social constructivist stance on learning (Vygotsky, 1978) is essential for a teacher to establish a context in which students work effectively in groups to share knowledge and strategies for reading comprehension. They maintain that students must verbalize their thinking about text and stimulate and challenge each other in order to reap the substantial benefits of peer collaboration for literacy learning. Instead, however, these authors found "knowledge transmission" conceptions of teaching and learning to predominate among teachers with whom they worked. Meloth and Sanders (1991) found both pre-service and experienced teachers to focus on social skills rather than academic learning in cooperative learning. Either of these stances on cooperative learning, as a knowledge transmission device or as a social skills development tool, mitigates against teachers helping students to focus on sharing ideas, information and strategies for reading comprehension and enjoyment.

The mainstream cooperative learning approaches (e.g., Johnson & Johnson, 1987; Slavin, 1990) provide generic procedures designed to manage students' behavior and relations in groups, but do not directly address the issue of quality group tasks and discussions, particularly for reading instruction. However, Paris, et al (1983) and Duffy, et al (1987) have established that instruction that specifically addresses declarative knowledge (what is being learned), procedural knowledge (how to do what is being learned), and conditional knowledge (why/when to use what is being learned) contributes to students' independent, flexible, and effective use of reading comprehension strategies. Recent work by Meloth and Deering (1992, 1994) has begun to apply these findings to literacy instruction with a task-oriented cooperative learning approach that emphasizes discussion of declarative, procedural and conditional knowledge of reading comprehension. In comparisons with a popular cooperative learning approach that emphasizes group rewards for individuals' reading comprehension quiz scores (Slavin, 1990), Meloth and Deering found the task-oriented approach to contribute to: higher amounts of talk about facts, concepts and strategies associated with reading comprehension, and a greater degree of student reporting of metacognitive knowledge (1992, 1994); and greater gains on measures of reading comprehension and metacognition (1992).

Webb's (1989) work also suggests that students' sharing their thinking about problem solving will contribute to greater gains in learning, at least for those who do the verbalizing.

The work of Paris et al (1983), Duffy, et al (1987), Meloth and Deering (1992, 1994) and Webb (1989) offers clear guidelines for improving classroom practice in reading instruction. However, the school reform and teacher-thinking research caution against a simple dissemination and implementation model. Therefore, the CRP took a collaborative approach, working *with* experienced teachers, rather than *on* them, to examine and stimulate their thinking about cooperative learning literacy instruction with the intent of contributing to improvement of practice.

Methods

Participants

The Cooperative Reading Project was conducted at Whitney Elementary School,[1] a bilingual school located in a low-income, Western, urban area. The student body is 75% Latino (predominantly Mexican American), with most of the remainder Caucasian; 40% of the students qualify for federal lunch support; 20% of the students have limited English proficiency, speaking Spanish as their primary language. Seven teachers, from grades one through five, plus the school principal volunteered to participate in the study. All participating educators were female. There were four teachers of mixed-age, first-second grade, bilingual classes; these classrooms were two double-sized rooms that had their adjoining walls removed during the prior summer so that the teachers could collaborate more effectively. There was one third grade, self-contained bilingual classroom. There were two teachers of mixed-age, fourth-fifth grade classes; these teachers worked with partners who taught math and science, and as part of a larger fourth-fifth team which coordinated curriculum and policies; these teaming structures were also new. There were two Latinas and one African American, with the rest Caucasians among participating educators. One teacher dropped out of the project after the first semester to go on long-term maternity leave. There was a great deal of enthusiasm for innovation and change at Whitney, as the principal, Dr. Lorenzo, and these teachers responded quickly and emphatically to our solicitation for project

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1 All names relating to the research site are pseudonyms.

participants. The CRP research team consisted of the three authors, all of whom speak some Spanish (ranging from beginner to functional), and all of whom are former classroom teachers.

Procedures

The Cooperative Reading Project used a cooperative learning staff development approach based on social constructivist learning theory (Vygotsky, 1978) and recent work by the research team (Meloth & Deering, 1992, 1994). The CRP consisted of a year-long, intensive collaboration with the Whitney Elementary School educators to examine and improve upon their use of cooperative learning literacy instruction. The first semester was an open-ended inquiry into teachers' beliefs regarding teaching and learning, and the relation of those beliefs to their instruction and students' verbal reports of learning. The second semester consisted of sharing findings from the first semester with the teachers, introducing them to concepts from social constructivist learning theory and instructional research, and collaborating with them to develop and implement agendas for instructional improvement. Both phases included collaborative staff development meetings; lesson observations; interviews with teachers and students; and assessment of student attitudes and learning. All project communication and procedures were presented in both Spanish and English as needed. The following data were analyzed for this paper: written fieldnotes from observations of literacy instruction; teachers' pre- and mid-program interviews; fieldnotes from educator-researcher staff development meetings; and student post-lesson interviews.

Observations

Each teacher was observed from six to ten times during literacy instruction. Observations consisted of: pre- and post-lesson interviews with the teachers (see below); post-lesson interviews with students (see below); written field notes describing instruction and the social context; and audio-taping of the teacher's verbal communication and that of a selected student group (these data are not yet ready for analysis).

Staff Development Meetings

Two types of collaborative staff development meetings were held. Both offered the educators information about instructional practices and student learning, plus insight and support for professional innovation in the local context. In addition, these meetings served as a window on the educators' thinking about instructional refinement.

Peer support meetings. Participating educators met weekly on an informal basis with one or more colleagues for approximately one-half hour in peer support meetings to share insights regarding cooperative learning literacy instruction, and to support each other's continued innovation. The participants were to record a brief, written account of the topics raised at each meeting. These accounts were subsequently presented to the principal for her comments and insights, and then to the research team for analysis.

Educator-researcher meetings. The second type of meeting, educator-researcher meetings, occurred approximately every six weeks, and involved the research team and the participating educators. These meetings consisted of a combination of sharing of information about successful and unsuccessful classroom strategies by the educators, plus presentation of information by the researchers. Presentation by the researchers consisted of two types of information -- 1) observational data and tentative findings; and 2) theory and research. Observational data consisted of fieldnotes from lesson observations; summaries of lesson observations and of teachers' pre-program interviews; and transcripts and summaries of students' post-lesson interviews (see below). Information on theory and research focused on applying principles of direct instruction (Murphy, et al, 1987), cooperative learning (Kagan, 1989), explicit instruction (Duffy, et al, 1987; Paris, et al, 1983), and social constructivist learning theory (Meloth & Deering 1992, 1994; Palincsar & Brown, 1984; Vygotsky, 1978). Some of this information was in response to interests identified by the teachers. A researcher recorded field notes regarding the concerns and interests raised at each meeting.

Interviews

Teacher Interviews. Teachers completed extensive, pre-, mid-, and post-program interviews using a modification of Meloth & Sanders' (1991) protocol. Questions concerned

teachers' beliefs about the benefits of cooperative learning, their theories of how it works, and its appropriateness in their professional contexts. The mid-program interviews also included the development of an instructional improvement agenda: a) each teacher was asked to consider a couple areas for instructional refinement from her own insights; b) feedback was provided from the CRP team on the teacher's perceived instructional strengths, and possible areas for refinement; c) each teacher selected two or three refinement goals on which to focus in subsequent instruction. Teachers also participated in brief, pre- and post-lesson interviews focusing on their lesson goals, activities and assessments (these data are not yet ready for analysis).

Student Interviews. Two randomly-selected student participants were interviewed individually after each observed lesson using a modification of Meloth and Deering's (1992) student interview instrument. Questions focused on the students' awareness of lesson content and goals, and their perceptions of cooperative learning. Students' awareness of conditional knowledge was rated low (1), medium (2), or high (3), using procedures from Meloth and Deering (1992; see Appendix).

Instrumentation

All participating students completed a pre-, mid- and post-program written assessment of literacy strategy use and motivational orientation, the Motivated Strategies for Learning Questionnaire (MSLQ; Pintrich & DeGroot, 1990). The MSLQ has three subscales which assess students' understanding of cognitive strategies, self regulation and self-efficacy. Three levels of the MSLQ were designed for this study -- primary, third grade, and fourth-fifth grade.

Data Analysis

Qualitative data were read and re-read to identify salient patterns and themes, as with ethnographic analysis (Spindler, 1982; Erickson, 1986) to be sensitive to the teachers' professional context and our unfamiliarity with it. Deductive analysis was applied using *a priori* concepts from our theoretical orientation, particularly social constructivist learning (Meloth & Deering, 1992; Palincsar & Brown, 1984; Vygotsky, 1978). In addition, we searched for emergent concepts via inductive analysis (Goetz & LeCompte, 1984).

Standard descriptive and comparative statistical procedures were used to examine patterns and relationships in the quantitative data. Teachers' explicitness about conditional knowledge during instruction was rated as *low*, *medium* or *high*, with numerical values from one to three, respectively. These procedures were similar to those used in Meloth and Deering (1992). Students' level of awareness about conditional knowledge during their post-lesson interviews was rated using the same system (see Appendix for examples). These data were aggregated across all classrooms, and compared across semesters using t-test procedures. Students' preferences for cooperative versus individual academic tasks, as stated in their post-lesson interviews, were also aggregated across all classrooms and compared across semesters using t-test procedures. The low n values of these data, and the subsequent lack of degrees of freedom did not provide enough statistical power for more refined analyses. Results on the students' pre-, mid- and post-program MSLQ assessments were aggregated by grade-level and compared using multivariate analysis of variance tests (MANOVA) and univariate-F procedures. These data were examined in terms of total MSLQ scores as well as for each of the three subscales. Alpha was set at $p<.10$ for the MANOVA procedures, as they were used as a preliminary test of significance (Glass & Hopkins, 1984). An alpha of $p<.05$ was used for all other comparisons. Significant MANOVA results were followed by univariate-F tests to ascertain the significance of MSLQ score changes over the two time intervals: pre- to mid-program (first semester), and mid- to post-program (second semester).

Internal validity was sought by regularly checking the accuracy of data and tentative assertions about them with the participating educators. We provided the teachers with copies of their pre-program interview transcripts, and copies of observation field notes and student post-lesson interviews on an ongoing basis. In addition, we met with them five times as a group, and twice individually, to share tentative findings and solicit their reactions to them. The researchers met at least bi-weekly throughout the data collection phase of the project to review quality control procedures and to refine data collection methods and foci.

Findings

Data analysis is ongoing on this project. Therefore, findings and conclusions should be taken as tentative.

Teacher Beliefs

The teachers' descriptions of teaching and learning were highly intertwined with each other, and interestingly, with their descriptions of literacy learning as well (Table 1). The teachers were strongly oriented toward positive affect and motivation. However, the strongest theme throughout the teachers' stated beliefs was the necessity of engaging students in meaningful, authentic tasks. The teachers were correspondingly disinclined to focus on isolated skills and mechanics, or extrinsic motivation for literacy learning, with only two of them mentioning such features. This interest in task authenticity extended to the their endorsement of students engaging in learning as an active and enjoyable process; creating and using their own text; learning to read at their own pace and level; and having frequent opportunities to develop proficiency with oral and written language. Only one teacher, one of those in fourth-fifth grade, emphasized the need for phonics instruction, skill development, spelling practice, and teaching to the district's criterion-referenced skills tests (CRT) and the CTBS.

Table 1
Teachers' Descriptions of Good Teaching, Good Learning, and Literacy Learning

Item	Frequency (N=7)
Authentic Tasks	7
Positive Affective Climate	6
Repetition/Practice	6
Oral Language Development	6
Text Immersion	4
Active Learning	4
Students Love Learning	4
Developmental Process Readiness Necessary	4
Create, Use, Share Text	3
Student Sharing	3
Students Learn "3R's"	3
Individualization	3

Each of the teachers also noted several reasons why peer collaboration was useful in literacy instruction. All stated that students can both teach each other, and learn from each other. A majority also stated that collaboration was useful for students to read together, to share ideas about text, and to learn how to work with others. Six of the seven teachers also noted that the ethnic and linguistic distribution of their students called for a variety of grouping schemes to allow

for sharing of ideas and language within and across linguistic, demographic and ability groups. The teachers' beliefs about their own roles for cooperative learning were noticeably less explicit than for students, as each offered only one to three possible roles for herself, versus a range of from four to eight benefits of cooperative learning for students. The more frequently cited roles for teachers were sharing ideas with student groups, and promoting helping, cooperation or discussion among group members.

Instructional Contexts

Instruction in literacy in the first-second grade classrooms during the first semester was organized around thematic units such as dinosaurs, Kenya/Africa, Japan and Mexico. The majority of literacy instruction was conducted with ability-heterogeneous groups of fifteen students, and ability-homogeneous groups of five drawn from them. This instruction was led by the two classroom teachers plus a paraprofessional; one group of fifteen was conducted in Spanish, with groups rotating across instructors weekly. In addition, direct reading instruction (in students' dominant language) was conducted in the smaller ability-homogeneous groups of five; meanwhile, other students worked independently at various literacy-oriented learning stations. In late 1992 and early 1993, these teachers began restructuring their literacy programs to a readers workshop approach. This change entailed students reading individual, self-selected trade books instead of grouped, teacher-selected thematic books. Under the new approach, the two teachers and the paraprofessional would circulate throughout the classroom conducting individual and small group reading conferences with the students to support their comprehension of their books and to assess progress. Each teacher focused only on the students in her own classroom with the paraprofessional rotating across both rooms. The teachers still conducted skill lessons, but now this was done with varied configurations of students based on need. Another change with the readers workshop approach involved students working in small groups to perform a variety of classroom tasks which were oriented to literacy (readers, alphabet workers); academic content (mathematicians, artists); and classroom maintenance (tidy patrol, attendance-takers). One of the teachers explained that she and her colleagues had found the original rotating groups system frustrating because they would work with fifteen children for a week, then not see them for two

weeks. This time lapse caused the teachers to lose track of the students' literacy levels and needs. Teachers in both of these classrooms noted that their students showed far greater enthusiasm for the self-selected books which they were reading under the readers workshop approach, than for the prior, thematic, teacher-selected materials.

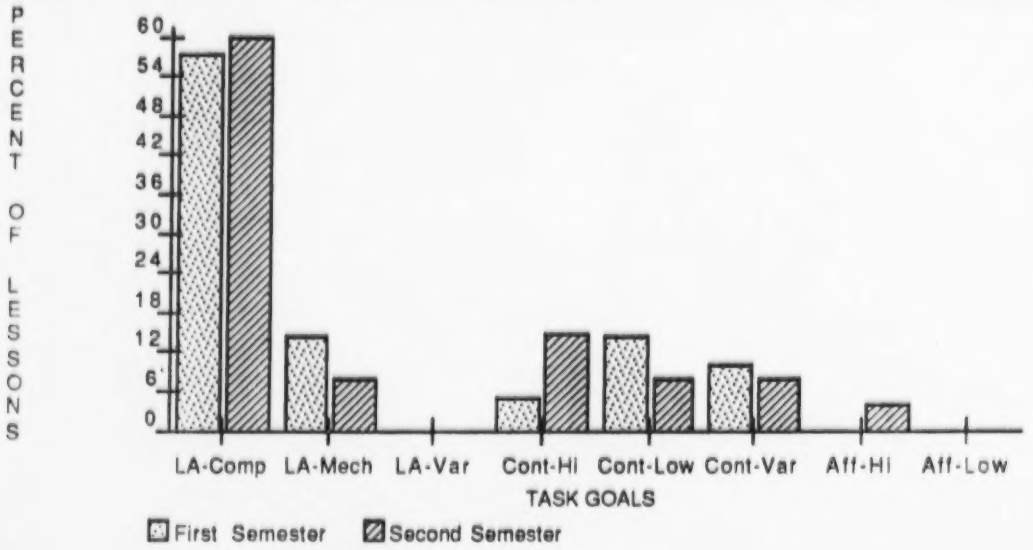
Instruction in the third grade bilingual classroom roughly paralleled that in the first-second grade classes, as this teacher began the year by conducting literacy instruction in teacher-directed small groups, and later moved to student-selected text. Collaborative activities were used under both formats as follow-ups to teacher-directed literacy instruction. Some of the literacy tasks included writing and drawing a valentine from one book character to another; determining the meaning of a book's title; analyzing and composing poetry; and writing various forms of questions about text. In addition, this teacher frequently modeled thinking strategies for students, such as how to approach an unknown word, or how to figure out the topic of a book. She was also quite explicit about how to collaborate on literacy tasks, frequently providing students with checklists to follow. Also like her first-second grade peers, this teacher maintained a very warm affective environment in her classroom, with a strong emphasis on encouragement and praise.

Instruction in the fourth-fifth grade classrooms was markedly different from that in the primary grades. Little instruction that could be characterized as primarily oriented to literacy was observed in either classroom during the school year. Instead, the focus of instruction was more typically oriented to language mechanics in one classroom, social skills in the other, and geography and history content in both. In one class, the school day typically began with seatwork requiring handwriting practice coupled with items related to language arts mechanics or low cognitive level social studies knowledge. "Literacy lessons" included viewing and discussing a video on parts of speech; recitation/guided practice on labeling parts of speech in sentences; organizing stories using idea webs; playing geography computer simulations; making Native American clay figures; answering worksheet questions about maps; completing map/globe worksheets; constructing a Thanksgiving turkey from a pine cone and then writing a story about it; and writing a story about South American clay figures which the students had made. This teacher provided frequent and lengthy opportunities for students to collaborate on these tasks. Quite often, however, students engaged in prolonged inappropriate behavior, such as wandering around the room and ignoring

their academic tasks. The other fourth-fifth classroom had a far higher degree of teacher direction of instruction, with four of the eight observations containing no independent student group collaboration whatsoever. "Literacy tasks" in this classroom included completing worksheets on personal learning style; planning a class party; performing a Black History play; and several sessions in which students worked in groups to design and perform conflict-resolution skits.

As is apparent from the above descriptions, the academic tasks selected by the teachers for their observed lessons covered a broad range of goals in language arts, other academic content areas, and the affective/social realm. There was some shift in the focus of these tasks from the first semester to the second, with a greater proportion of tasks oriented to high cognitive level academic content, affective/social content, and language arts comprehension (especially in secondary tasks), and a decrease in low level academic content and language arts mechanics (Figures 1 and 2 display the primary and secondary task foci of all teachers' literacy tasks by semester).

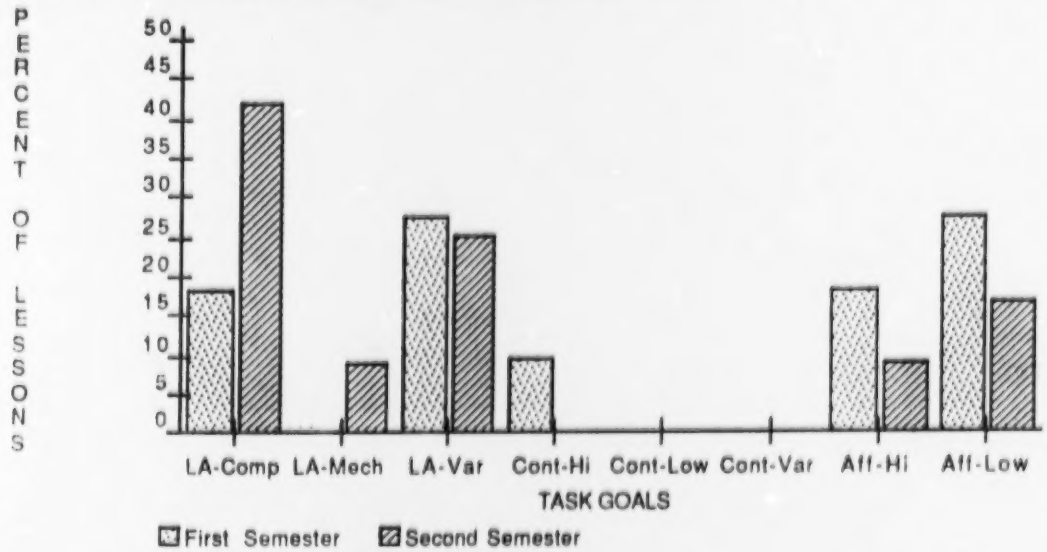
Figure 1
Primary Orientations of Literacy Tasks by Semester for All Teachers Combined



Note:
Tasks constitute the "work" of lessons, and are analyzed here in terms of their focus and level.

- Task Focus is the domain of the apparent goal of the task.
  - LA (Language Arts) -- a Language Arts goal
  - Cont (Content) -- oriented to any academic content area other than LA
  - Aff (Affect) -- oriented to Affective &/or Social concerns
- Level specifies the degree of complexity at which students were directed to engage in the task focus.
  - Lessons with a Language Arts [LA] focus were classified as either:
    - Comp (Comprehension) --oriented to reading &/or writing understandable &/or enjoyable text
    - Mech (Mechanics) -- oriented to grammar, punctuation, spelling, without reference to broader issues of comprehension
    - Var (Varied) -- both mechanics and comprehension goals
  - Lessons with a Content focus OR Affect focus were classified as either:
    - High -- requires complex reasoning
    - Low -- requires simply applying set procedures
    - Var (Varied) -- both high and low goals

Figure 2
Secondary Orientations (when present) of Literacy Tasks by Semester for All Teachers Combined



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    - Var (Varied) -- both mechanics and comprehension goals
  - Lessons with a Content focus OR Affect focus were classified as either:
    - High -- requires complex reasoning
    - Low -- requires simply applying set procedures
    - Var (Varied) -- both high and low goals

A shift also occurred in the degree of teachers' explicitness during instruction about conditional knowledge, with the second semester lessons showing a significantly higher mean (Table 2). That is, teachers became more explicit about when or why students might be able to use the knowledge from their literacy lessons. Students' mean level of awareness of conditional knowledge in post-lesson interviews showed a slight, statistically nonsignificant increase as well (Table 2).

Table 2
Comparison of Means of Degree of Explicitness about Conditional Knowledge[a] of Teachers and of Students by Semester (All Participants Combined)

	1st Semester	2nd Semester	Difference M_2-M_1	Unpaired Two-Tailed t-Test
Teachers	M_1 = 1.857 SD = 0.793	M_2 = 2.370 SD = 0.555	+0.513	$t_{(46)}$ = 2.308 p = .0255
Students	M_1 = 1.909 SD = 0.723	M_2 = 2.000 SD = 0.915	+0.091	$t_{(75)}$ = 0.471 p = .6391

Note:
(a) Degree of explicitness about conditional knowledge was rated on a scale from 1-3, with 3 representing a very high degree of explicitness, and 1 a very low degree (see Appendix for examples).

Students in the first-second and third grade classrooms showed some significant gains in their MSLQ total scores and for several of the sub-tests in the mid- to post-program time interval (i.e., during the second semester; Table 3). The first-second grade students closely approached significance with their MSLQ total scores, and showed significant gains across all three subtests -- self-efficacy, cognitive strategy and self-regulation. However, because they do not quite show statistically significant gains in their total score ($p<.05$) these findings must be approached cautiously. The third graders showed strong gains in total MSLQ scores but only the cognitive strategy subtest showed significant differences. Pre- to mid-program MSLQ test score differences for these students were non-significant, as were all differences for the fourth-fifth grade students.

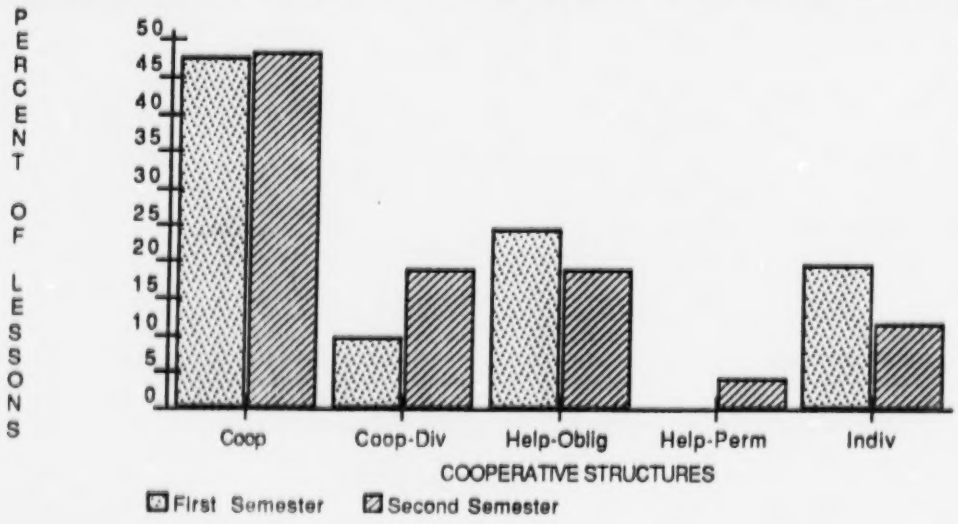
Table 3
Statistically Significant Comparisons of Mid- to Post-Program MSLQ[a] Scores

Grade / MSLQ Subtest	Comparison	
	MANOVA	Univariate-F
First-Second[b]		
Total	NS $F_{(2,47)} = 2.22$; $p=.119$	NS $F_{(1,48)} = 3.91$; $p=.053$
Self-Efficacy	$F_{(2,54)} = 7.81$; $p=.001$	$F_{(1,55)} = 15.09$; $p=.000$
Cognitive Strategy	$F_{(2,55)} = 3.33$; $p=.043$	$F_{(1,56)} = 5.08$; $p=.028$
Self-Regulation	$F_{(2,50)} = 3.19$; $p=.050$	$F_{(1,51)} = 6.34$; $p=.015$
Third[c]		
Total	$F_{(2,17)} = 4.50$; $p=.027$	$F_{(1,18)} = 7.19$; $p=.015$
Self-Efficacy	NS	NS
Cognitive Strategy	$F_{(2,17)} = 8.51$; $p=.003$	$F_{(1,18)} = 16.67$; $p=.001$
Self-Regulation	NS	NS

Note: (a) MLSQ = Motivated Strategies for Learning Questionnaire.
(b) MSLQ scored on a 3-point Likert scale, with 3 representing the highest level of awareness.
(c) MSLQ scored on a 5-point Likert scale, with 5 representing the highest level of awareness.

The teachers' instructional approaches for literacy were highly varied, as is indicated in the descriptions provided earlier. The most common group work structure during both semesters was cooperative, the most thoroughly collaborative structure, as student groups must work on common tasks with common materials (Figure 3; Graybeal & Stodolsky, 1985). In all the classrooms, students were often permitted to solicit and provide help as needed on academic tasks, a helping-permitted group structure; this structure was often used for individual tasks which were assigned in addition to group tasks. As noted, one fourth-fifth grade teacher had a strong tendency to maintain direct control of instruction, an individual group structure, regardless of her stated intent to utilize student collaboration. The teachers' choices of group structures showed little change from the first to second semester, with slight increases in the proportions of cooperative division and helping-permitted structures, and decreases in individual and helping-obligatory.

Figure 3
Group Structures of Literacy Lessons by Semester for All Teachers Combined



Note:
Group Structure refers to the type of operating procedures specified for the students by the teacher relative to their explicit collaborative task (adapted from Graybeal & Stodolsky, 1985).

Coop = Cooperative -- common ends & means for groups
Coop-Div= Cooperative-Division -- some ends and means common, with others divided among group members [e.g., Jigsaw method]
Help-Oblig Helping Obligatory -- group members are required to assist each other
Help-Perm= Helping Permitted -- group members are allowed [but not required] to assist each other
Indiv -- Individual -- no student-student collaboration permitted

Students strongly preferred collaborating with peers versus working solo on their literacy tasks during the first semester, yet this tendency showed a large, statistically significant increase in the second semester (Table 4). At this stage of analysis, no differentiation has been made regarding the size of student groups, so a preference for group work may mean working with a partner or with larger numbers of peers.

Table 4
Comparison of Students' Preferences for Group or Solo Work Structures[a] By Semester for All Classrooms Combined

First Semester	Second Semester	Difference M_1-M_2	Unpaired Two-Tailed t-Test
G = 22	G = 40		$t_{(75)} = 2.753$
S = 11	S = 4		$p = .0074$
$M_1 = 1.333$	$M_2 = 1.091$	+0.242	
SD = 0.479	SD = 0.291		

Note:
(a) Group (rated numerically as 1) = Any stated preference for peer collaboration on the day's literacy task
Solo (rated numerically as 2) = Any stated preference to work alone on the day's literacy task

Collaborative Intervention

We held four staff development meetings with all participants which were focused on substantive instructional issues during the school year and one more at the end of the year. The lengthy, individual, pre-, mid-, and post-program interviews also dealt largely with substantive instructional issues. Each substantive group meeting was structured to allow for feedback from the teachers regarding the research procedures; sharing by the teachers regarding their successes and frustrations with cooperative literacy instruction; and sharing by the researchers regarding relevant research literature and/or data and tentative findings from this project.

In an early meeting, the research team shared basic information about coherent instructional planning and delivery (Murphy, et al, 1987), plus information on social skills development and improving small group process (Kagan, 1985) at the request of several of the teachers. The teachers shared ideas about managing cooperative group instruction, peer feedback, and teaching effective group behaviors. In the January, 1993, mid-program meeting the CRP staff presented the teachers with general feedback from observations in all their classrooms including data on students' moderate levels of awareness of conditional knowledge and student preferences regarding group work. We also shared that we had seen numerous, but often very brief or unstructured opportunities for student collaboration. Additionally, we noted that we had observed a wide variation in lesson foci ranging from cognitive (thinking and learning regarding new/different content); procedural (following set steps to completion; Doyle, 1988); subject area

content (a subset of cognitive -- focus on academic content with little or no relation to learning literacy skills or refining them); affective (feeling good; getting along with others). The principal and teachers discussed the implications of these findings at length with each other and the research team. They were particularly concerned about the lack of student awareness of conditional knowledge. The CRP staff offered the following general recommendations to the teachers for their consideration: 1) utilize social constructivist concepts (sharing/modeling of thinking, especially regarding conditional knowledge; scaffolded discussion); 2) provide adequate time for rich collaborative discussions; 3) tie group collaboration directly to teacher-directed lesson preceding it; 4) move about room at least some of time during group work to monitor behavior and focus thinking/discussion. One of the CRP team met subsequently with each teacher in the project to conduct the mid-program interview which focused on: 1) teacher beliefs; 2) sharing our mid-program findings regarding the teacher's instructional strengths, as well as areas to consider for refinement; and 3) teacher selection of areas on which she would like to focus her instructional refinement efforts. The teachers' chosen goals (Table 5) drew upon their own insights, the general CRP feedback to the whole group, and the individual feedback they received from the CRP interviewer.

Table 5
Teachers' Self-Selected Instructional Refinement Goals

Goal	Frequency
Emphasize the short-term why/when for learning	5
(plus, "ask students why/when"; emphasize what/how)	1 ea.
Promote sharing of thinking and ideas in groups	2
Become familiar with Reciprocal Teaching	1
Choose tasks with more direct focus on literacy	1
Get all students involved in group discussions	1
Investigate cooperative learning strategies -- things to ask student groups; grouping strategies; getting students to express selves	1
Modeling collaborative interaction	1
Plan for re-emphasizing lesson goal at conclusion	1

Discussion

The social context of Whitney School was a highly salient factor in instruction and planning for each of the teachers. Their strong interest in building the self esteem and motivation of their working class students was quite consistent with their generally warm, positive classroom contexts. Interesting, this affective orientation was not cited as a major factor in the teachers'

endorsement of cooperative learning. By contrast, Meloth and Sanders (1991) found teachers to strongly focus on affective/social learning in cooperative learning. The CRP teachers did teach some cooperative group interaction skills, yet only one made this a mid-program refinement goal (Table 5), further suggesting the limited salience of this issue. Also closely tied to the social context of Whitney was instruction in the bilingual classrooms (first through third grade). These classrooms were quite consistent with current thinking on bilingual-multicultural education in the presentation of academic content in the students' native language, provision of numerous opportunities to use both languages in meaningful contexts, and in equal valuing of Spanish and English (cf., Cummins, 1986; Padilla, et al, 1990).

The teachers' shared belief that students can teach each other and learn from each other, as well as their more moderate support for students sharing reading and ideas about it, are consistent with a social constructivist learning perspective (Palincsar, et al, 1989; Vygotsky). However, there were several shortcomings or inconsistencies in their enactment of those beliefs. The teachers spoke mainly in terms of student behaviors and attitudes necessary for successful group learning but had relatively unarticulated concepts of their own role in the process. During the first semester, they frequently assigned cognitively simple tasks for group work, such as reading aloud or filling out worksheets together. There was little teacher modeling of thinking strategies or promotion of discussion in groups about them. Additionally, there was often a lack of coherence between teacher-directed portions of lesson sequences and the group work portions. None of this was particularly surprising since mainstream cooperative learning advocates offer only limited guidance about the teacher's role, focusing primarily on implementing particular group structures and/or team-building strategies (Johnson & Johnson, 1987; Kagan, 1989; Slavin, 1990). What is lacking in this literature is the teacher's role in selecting cognitively rich tasks for student group work, and focusing children's attention to key lesson content through pre-, during- and post-group work instruction. The CRP team addressed these issues by first sharing basic direct instruction principles to promote greater instructional coherence (Murphy, et al, 1987). We later offered more refined input at the request of the teachers. We shared ideas on how to make conditional knowledge explicit by stating why/when learning could be used and/or by asking the students to do so (Duffy, et al, 1987; Paris, et al, 1983). In addition, we consulted with the teachers on applying

social constructivist principles such as modeling of thinking, and scaffolding of students' group discussions (Meloth & Deering, 1992, 1994; Palincsar & Brown, 1984).

The strong increase in teachers' explicitness about conditional knowledge in the second semester (Table 2) is an encouraging finding since it followed our consultation on it and had been selected by five of the six teachers as a refinement goal. This suggests that teachers can make significant instructional changes in a relatively short time when sufficiently informed and motivated to do so. It is somewhat disappointing to note the lack of corresponding increase in students' awareness of conditional knowledge in their post-lesson interviews (Table 2). However, this finding was not surprising as prior research suggests that students' awareness of conditional knowledge can be quite resistant to change (Duffy, et al, 1987; Meloth, 1990). Meloth (1990) found that poor readers required twelve to sixteen weeks of intensive explicit instruction before improved awareness of metacognitive knowledge was evident in interviews. It is likely that a more prolonged and focused instructional intervention than this study provided would be needed to contribute to significant changes in this area.

The moderate shift in literacy lesson goals over the year toward a greater emphasis on direct literacy content and thinking processes (Figures 1 & 2) was consistent with the teachers' stated interest in task authenticity, as well as the CRP team's suggestions to emphasize cognitively rich tasks. The teachers' concerns about task authenticity were also reflected in the shift in all the primary classrooms towards student-selection of literature. Task authenticity was not readily apparent in the academic tasks of the 4th-5th grade classrooms during the first semester, but some increase was noted in the second. The fourth-fifth grade teacher who endorsed a skill orientation stated in her mid-program interview that she believed that her students were lacking a foundation in grammar and mechanics and that she had addressed this problem during the fall. Having since seen satisfactory results on a mid-year CRT, she said she was prepared to focus more on reading and writing of meaningful, enjoyable text. This statement was consistent with some of her subsequent literacy lessons. The other fourth-fifth grade teacher sought task authenticity in the second semester through frequent use of drama activities oriented toward both content-area and affective goals.

The MSLQ data present some interesting issues, however, caution should be taken in their interpretation. The first and second graders were just beginning to learn to read and write so they would be expected to show dramatic gains in understanding of these processes given any competent instruction whatsoever. Therefore, it must be considered that the CRP intervention had little impact on the MSLQ gains of these students. Nevertheless, cautious optimism seems warranted. The MSLQ gains in the first through third grade classrooms (Table 3) occurred during the second semester of the study when the teachers were working on their improvement agendas, and in which they showed greater explicitness about conditional knowledge. Knowing when or why to employ a particular literacy concept or strategy would likely contribute to gains in understanding of cognitive strategies, a finding evidenced by both the first-second and third grade students. Self-regulation, on which the first-second grade students also showed significant gains, is also highly related to the when/why orientation of conditional knowledge. Additionally, the self-efficacy gains of the first-second graders could be associated with conditional knowledge, since knowing when or why to use literacy learning could be expected to increase one's confidence in that domain.

The lack of significant gains on the MSLQ for the fourth-fifth grade students could be attributable to the limited duration and intensity of the intervention noted above, and perhaps to other factors as well. Most obviously, the two fourth-fifth grade teachers' lessons were rarely focused directly on literacy, which is the main content emphasis of the MSLQ. Additionally, one of these classrooms had a great deal of off-task student behavior, making it less likely that students would learn much from their academic tasks, regardless of the focus of the tasks. In the other fourth-fifth grade classroom the teacher maintained a high degree of control of classroom interaction, such that students were only occasionally afforded an opportunity to discuss their academic tasks in small groups. Peer discussions appear to provide important scaffolding for students as they grapple with the complex issue of how, when and why to use literacy learning (Meloth & Deering, 1992, 1994; Palincsar & Brown, 1984). Additionally, the high degree of teacher direction may have limited students' development of self-regulation and self-efficacy, as they did not have chances to talk about when and how to apply strategies, nor to practice doing so.

Thus, it appears that both the fourth-fifth grade classrooms provided less than optimal contexts for the social construction of knowledge regarding literacy.

The slight shift in cooperative group structures during the school year was mostly a result of the primary teachers using student sharing/feedback of reading and writing (a cooperative-division structure; Graybeal & Stodolsky, 1985), and a modest decrease in teacher direction by one fourth-fifth grade teacher (individual structure). The general lack of change in group structures during the course of the school year was not surprising, as our CRP feedback to teachers did not call attention to such structural issues, and there was no other impetus for such change. The teachers' flexibility about strategies for grouping students to promote different kinds of social, affective and cognitive goals seems well-founded relative to various literature on the subject: ability- and demographically-heterogeneous groups are associated with the development of positive inter-group relations (cf., Slavin, 1983); broadly ability-heterogeneous groups are associated with lower achievement by middle-ability students (Webb, 1989); and gender-heterogeneous groups are associated with undesirable group processes and learning outcomes for girls (Webb, 1984). Therefore, the teachers' different grouping schemes, with the noted lack of group work noted for the one fourth-fifth grade teacher, had the potential to promote varied positive processes and outcomes without locking into the shortcomings associated with any particular grouping scheme, points which were shared by the CRP team.

The students' strong increase in preference for peer collaboration from a 2-1 to a 10-1 ratio over the course of the year was an especially interesting finding. This shift was not accompanied by any dramatic changes in the cooperative group structures used by the teachers (Figure 3), nor in an increase in teacher attention to affect (Table 5; Figures 1 & 2). Rather, the changes that were made by teachers in their use of cooperative learning were related to the content of lessons: increased teacher explicitness about conditional knowledge (Tables 2 & 5); a shift to student-selected literature in primary classrooms; and slight shifts in literacy lesson goals to higher cognitive levels (Figures 1 & 2). This finding runs counter to mainstream cooperative learning literature which focuses on group structures (Kagan, 1989; Slavin, 1990) and affect/social skills (Johnson & Johnson, 1987; Kagan, 1989), while saying little or nothing about the content of instruction. It appears that students want and need more than just appropriate group structures for

productive collaboration. They also benefit from academic tasks that provide rich opportunities, and even the necessity, for active social construction of knowledge, and from teacher direction which makes the utility of such work explicit (see also Deering & Meloth, 1993; Meloth & Deering, 1992, 1994; Palincsar & Brown, 1984).

Conclusions

A number of positive changes occurred during the course of this project, some of them quite subtle. Students showed increases in liking for cooperative learning and to some extent, metacognitive knowledge. Teachers examined their beliefs and instruction, undertook instructional refinement efforts, and made noticeable changes in their instruction. It is impossible to establish causal links between these factors, yet the overall profile of the project is quite positive, suggesting that there is something of merit to the process. However, there were important distinctions between the first through third grade classrooms, and the two fourth-fifth grade classrooms. The lower grades classrooms were characterized by a more direct focus on literacy learning. One of the fourth-fifth grade classes was often quite chaotic, while the other was characterized by teacher-directed instruction and little or no opportunity for student group work. All the gains in students' metacognitive knowledge as measured by the MSLQ were in the lower grades classes, which stands to reason given the differences in instructional contexts.

The variation in instructional processes and outcomes across classrooms seems to illustrate the complexity teachers face in undertaking change in the dense, complex environments of school classrooms. Our research team strove to work with this diverse group of teachers as colleagues, and to encourage them to take the initiative in identifying and pursuing agendas for improvement. We team strove to scaffold this process with consultation and group discussions about classroom processes, student outcomes, and relevant research and theory. We tried to promote a high degree of reflection, and sharing of thinking among participants. However, in no case did we try to impose ideas or change on any of the teachers. Thus, the teachers owned their improvement agendas, and were much more likely to pursue them with commitment, awareness and fidelity (Richardson, 1990; Zumwalt, 1986). Over a more extended period of time, still more and greater innovations in instructional processes and gains in student outcomes might have occurred. The

social constructivist approach employed in this project seemed slow and unspectacular, yet unlike dissemination models, it is consistent with the term, professional development." Further such collaborations between teachers and researchers are recommended to improve instruction and our understanding of this complex process.

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Appendix
Sample Responses of Students' Awareness of Conditional Knowledge

High Awareness

[2nd grade Caucasian girl. The students were drawing pictures of Kenyan towns and cities.]

Interviewer: Why would you want to know about Africa?

Student: Well, they have a neat language there. And there's lots of neat stuff about there. They wear different clothes sometimes....Like patterns and lines and stuff like that.

I: Well, when would you need to know about Africa?

S: When I would go on a safari there. I'd need to say, "How much is that?" and "How much is that?" and "How much does a school cost?"....I'd like to camp there. See what it looks like inside their houses....What kind of toys they have. How they make their clothing. And I'd like to taste some more of their food....

(CRP, 10/30/92)

Medium Awareness

[4th grade Caucasian girl. This student had worked with a partner on a computer simulation in which they tried to track a criminal around the world, thus requiring application of research skills, such as using the world almanac, and geography skills.]

I: Why might you want to know about maps and money and stuff like that?

S: 'cause in case you go there!

I: Any other reasons?

S: 'cause I want to....I want to be a teacher when I grow up....When I be a teacher, I can get one of those [computer simulations] and I can tell my students to go back and play it, and help 'em out with it.

I: Any other times you'd want to know about money and countries and stuff like that?

S: No.

(CRP, 10/28/92)

Low Awareness

[3rd grade Latino boy. The students had worked in pairs to give peer feedback on writing based on a format which they had on cards.]

I: Why might it be important to do conferencing and have book talks?

S: So you could be a better reader and a better writer....If you read and write then you can spell better and when you grow up you could be a good writer.

I: Oh, okay. When do you need to know about becoming a better reader or writer?

S: When you're young, so when you grow up you can be a really good writer.

(CRP, 12/01/92)